

F. JOINT COOPERATION TREATY

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NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C. 20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 12 October 2000 (12.10.00)	
International application No. PCT/GB00/00936	Applicant's or agent's file reference M.COSTA 2-2-
International filing date (day/month/year) 14 March 2000 (14.03.00)	Priority date (day/month/year) 15 March 1999 (15.03.99)
Applicant COSTA, Mauro et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
28 August 2000 (28.08.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer <p style="text-align: center;">Pascal Piriou</p> Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference M.COSTA 2-2-	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 00/ 00936	International filing date (day/month/year) 14/03/2000	(Earliest) Priority Date (day/month/year) 15/03/1999
Applicant LUCENT TECHNOLOGIES INC et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of Invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

3

☐ None of the figures.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/00936

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04L29/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 793 771 A (DARLAND TIMOTHY E ET AL) 11 August 1998 (1998-08-11) abstract column 9, line 40 - line 67 -----	1-4

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

15 August 2000

Date of mailing of the international search report

22/08/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentaan 2
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Authorized officer

Canosa Aresté, C

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/00936

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5793771 A	11-08-1998	CA 2258597 A	31-12-1997
		EP 0917786 A	26-05-1999
		WO 9750217 A	31-12-1997
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference M.COSTA 2-2-3-2	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB00/00936	International filing date (day/month/year) 14/03/2000	Priority date (day/month/year) 15/03/1999
International Patent Classification (IPC) or national classification and IPC H04L29/06		
Applicant LUCENT TECHNOLOGIES INC et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 7 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 28/08/2000	Date of completion of this report 13.07.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Körbler, G Telephone No. +49 89 2399 8250 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/00936

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1,4,5	as originally filed			
2,2a,3	as received on	22/03/2001	with letter of	21/03/2001

Claims, No.:

1-6	as received on	22/03/2001	with letter of	21/03/2001
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Drawings, sheets:

1/3-3/3	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/00936

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.
- ☒ claims Nos. 5-6.

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the said claims Nos. 5-6.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

- ☐ the written form has not been furnished or does not comply with the standard.
- ☐ the computer readable form has not been furnished or does not comply with the standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/00936

1. Statement

Novelty (N)	Yes:	Claims	
	No:	Claims	1,4
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-4
Industrial applicability (IA)	Yes:	Claims	1-4
	No:	Claims	

2. Citations and explanations **see separate sheet**

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Cited document:

D1: US-A-5 793 771

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 1a. The present formulation of independent claim 1 is such that its corresponding subject-matter is not novel having regard to the disclosure of document D1.

Document D1 discloses (the references in parentheses applying to this document):

A method of providing a user of a telecommunications network with Signalling System Number 7 functionality (Abstract and column 2, line 21-28), the network operating Internet Protocol and at least one of the Transport Control Protocol and User Datagram Protocol (column 1, line 46-47) and having between the user and the Core Network of the telecommunications network at least one interface (Figure 4, 408), characteried by providing between the user and the Internet Protocol and interface protocol layer((202) and column 2, line 29-50)), said interface protocol layer interfacing with at least one of Transport Control Protocol and User datagram Protocol (column 3, line 2-3 and column 3, line 14-16 and Figure 10 (1018,1022) and Figure 11 (1102,1130)) whereby Signalling System Number 7 information is transmitted across said at least one interface (column 2, line 51- column 3, line 26).

This is the wording of claim 1 of the present application, the subject-matter of which is consequently not novel. The claim therefore does not meet the requirements of Art. 33(2) PCT.

- 1b. It should be noted that even if the Applicant were to amend claim 1 in such a manner as to enable him to argue that the subject-matter were novel, based on **minor** differences between the features of this claim and those disclosed in D1, the subject-matter of claim 1 would still not involve an inventive step, Article 33(3)

PCT, having regard to the disclosure of D1 especially as this document discloses the same object and the same type of solution as claimed in this claim.

2. Independent claim 4, although phrased as network claim, is nonetheless a simple repetition of the subject-matter of method claim 1 and hence does not meet the requirements of the PCT for the same reasons.
3. The dependent claims 2-3 do not seem to contain any subject-matter which, in combination with the subject-matter of the claim on which they are dependent, would lead to a claim involving an inventive activity (Article 33(3) PCT). They are either derivable from the above cited documents or concern simple embodiments without inventive merit in themselves.
4. In his reply to the written opinion the Applicant asserts that:
"...Far from being derivable from D1, in which translations of signalling information are made at an interface between two PTT networks at the same network layer, and in which IP is not in any way involved..."

However, document D1 discloses the technical feature of changing the network layer (Figure 10 (1018,1022)) and Figure 11 (1102,1130)) and that IP is involved. Moreover, document D1 describes the use of TCP and UDP (column 1, line 46-47 and column 2, line 24,34 and column 3, line 2-3 , line14-16).

These arguments are therefore considered as not convincing.

Re Item VII

Certain defects in the international application

1. The independent claims are not in the two-part form required by Rule 6.3(b) PCT, with a preamble based on D1.

Re Item VIII

Certain observations on the international application

1. Claims 1-4 do not meet the requirements of Article 6 PCT for the following reasons:
 - 1a. The formulation "**...providing between the user and the Internet Protocol an interface protocol layer, said interface protocol layer interfacing with at least...**" used in claim 1 and 4 seeks to define the invention by referring features which concern the effect which is desired to be achieved and thereby rendering the definition of the subject-matter of said claim unclear (Article 6 PCT). See also PCT Guidelines Chapter III-4.7.
 - 1b. Moreover, claim 1 and 4 do not meet the requirement of Rule 6.3(a) PCT, that the definition of the matter for which protection is sought shall be in terms of the **technical features** of the alleged invention.
In contrary, claim 1 and 4 only disclose an **abstract feature** (introduction of an interface protocol layer).
Therefore, the requirement of Rule 6.3(a) PCT is not met.
 - 1c. The same objections as above (1a.) apply to the dependent claims 2-3 as they also all disclose an aim to be achieved:
Claim 2: "**...in which the interface layer is provided between a signalling application adopting the SCCP SAPs to access the signalling transport service, and the Internet Protocol.**"
Claim 3: "**...in which the interface protocol layer provides additional functions not provided by...**"
 - 1d. Finally, how is this transmitting of Signalling System Number 7 information by providing an interface protocol layer done ? This technical feature is completely unclear (Article 6 PCT) and this technical feature seems however not to be included in the description and it seems therefore that a skilled person would not have a sufficiently clear and complete description to carry out the alleged invention (Article 5 PCT).

telecommunications data, over the Internet Protocol has been addressed in different ways. This specification relates to the requirements that SS7 users place on the underlying network. General solutions to the problem have been proposed which require the specification of new protocols whose main purpose is to provide fault
5 tolerant reliable/unreliable data transfer between communicating processes over IP networks. These protocols are generic and do not assume specific translation or adaptation functions from/to SS7 protocols.

Another category of solutions includes adaptation layers specifically designed to adapt/shield SS7 users from the underlying IP networks.

10 The first category of solutions (i.e. generic protocols) are typically rather complex; they are in fact typically conceived for use in the Internet as a distributed geographical network. They have to incorporate reliability and fault management characteristics to compliment the existing Internet Protocols. They have also to include full routing and addressing mechanisms. These solutions are not suited to simple
15 network topology, like point-to-point links arrangements.

The second category of solutions (additional protocols which act as adaptation layers) are located between existing SS7 protocols and existing Internet Protocols, and they have the purpose of shielding the SS7 user from the underlying network. These approaches are powerful but they are mainly conceived as straightforward adaptation
20 protocols to be used in a geographical network, at the boundaries between SS7 domains and IP domains or when inter-working between the two worlds is necessary. Overall, these protocols or adaptation layers have to be inserted between existing protocols like SCCP (Signalling Connection Control Protocol)) and TCP. Because of this, they add complexity to the system and are not suited for simple network topology
25 arrangements, for example cellular networks

According to the invention, in a telecommunications network using Internet Protocol, a method of passing signaling information, meeting the telephone network-like requirements, characterized by providing between a user and the Internet Protocol an interface protocol layer, said interface protocol layer interfacing with at least one of
30 the Transport Control Protocol and the User Datagram Protocol.

Preferably the interface protocol layer is provided between a signalling

application adopting the SCCP SAPs (Service Access Points) to access the signalling transport service, and the Internet protocol. Telephone network-like requirements are therefore met.

In the accompanying drawings, the prior art is illustrated in figures 1 and 2 in
5 which:-

Figure 1 is a highly schematic diagram of a mobile radio telecommunications system; and

Figure 2 illustrates a currently-used protocol stack.

The invention will be described by way of example only with reference to
10 Figures 3, 4 and 5 in which:-

Figure 3 illustrates the inventive protocol stack;

Figures 4a and 4b illustrate prior art and inventive protocol stacks implemented in a Base Station Controller in the Global System for Mobile telephones (GSM); and

Figures 5a and 5b illustrate prior art and inventive protocol stacks implemented
15 in a Radio Network Controller in the Universal Mobile Telephone System (UMTS).

In Figure 1 a GSM and UMTS mobile radio telecommunications system 10 comprises GSM and UMTS Core Networks (CN) 12, 14 which communicate over respective radio access network interfaces 16, 18 with first and second Base Station Controllers (BSC) 20, 22 each controlling a plurality of Base Transceiver Stations (BTS) of which two only 24, 26 are shown. Each BTS controls at least one
20 telecommunications cell over an air interface 28, 30 and each cell may contain one or more mobile users 32, 34.

The SS7 protocol is used to exchange radio access network signaling messages between the CNs 12, 14 and the BSCs 20, 22.

25 Suppose now that CNs 12, 14 wish to communicate with BSCs 20, 22 through the signalling interfaces 16, 18.

The current GSM signalling transport protocol arrangement for the signalling interface 16 is shown in Figure 2.

The GSM BSC 20 use the signaling interface 16 that operates SCCP 42 which
30 offers to the Signalling Application 38 a number of Service Access Points (SAP) to access its signalling transport services. Below the SCCP protocol layer 42 are three

CLAIMS

- 1 In a telecommunications network using the Internet Protocol, a method
of passing signaling information characterized by providing between a user 32 and the
Internet Protocol 60 an interface protocol layer 56, said interface protocol layer
5 interfacing with at least one of the Transport Control Protocol and the User Datagram
Protocol
- 2 A method according to Claim 1 in which the interface protocol layer is
provided between a signalling application adopting the SCCP SAPs to access the
signalling transport service, and the Internet Protocol.
- 10 3 A method according to Claim 1 or Claim 2 in which the interface
protocol layer 56 is arranged to adapt a user operating Signaling System Number 7 to
the Internet Protocol.
- 4 A method according to any preceding claim in which the Additional
Protocol layer 56 provides for the user selected SS7 functionality.

09/936673

531 Rec'd PCT/PTC 14 SEP 2001

Received 1 page of
disclosure.

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